January 12, 1933

✦

ENGINEERING NEWS-RECORD

A WEEKLY JOURNAL OF CIVIL ENGINEERING
AND CONSTRUCTION PRACTICE

Volume 109

July to December, 1932

McGRAW-HILL PUBLISHING COMPANY, INC.
330 W. 42d St.
NEW YORK CITY

INDEX TO ENGINEERING NEWS-RECORD

VOLUME 109—July to December, 1932

		Page
July	7	1 to 32
July	14	33 to 62
July	21	63 to 92
July	28	93 to 122
Aug.	4	123 to 152
Aug.	11	153 to 182
Aug.	18	183 to 212
Aug.	25	213 to 242
Sept.	1	243 to 274
Sept.	8	275 to 304
Sept.	15	305 to 334
Sept.	22	335 to 364
Sept.	29	365 to 394
Oct.	6	395 to 426
Oct.	13	427 to 456
Oct.	20	457 to 486
Oct.	27	487 to 516
Nov.	3	517 to 548
Nov.	10	549 to 578
Nov.	17	579 to 608
Nov.	24	609 to 638
Dec.	1	639 to 670
Dec.	8	671 to 700
Dec.	15	701 to 736
Dec.	22	737 to 766
Dec.	29	767 to 796

A

Accelerometer for measuring earthquakes. N. H. Heck *288
Accidents:
  Accident injures men in Owens River aqueduct n480
  Hetch Hetchy cave-in kills five in tunnel. n298

AERONAUTICS

  Airplanes carry machinery for dredges and power plant 407
  Hydroplane ramp 516
  Telescopic traveling mast to land Lakehurst dirigibles *465
  Timber traveler erects airship dock.... *487
American Assn. of Engineers:
  Convention n419
American Assn. of State Highway Officials:
  Convention reviews progress and problems 625
American City Planning Institute:
  Urban land policy discussed n606
American Electric Railway Assn. changes name to American Transit Assn. n418
American Engineering Council:
  As to credit where due e692
  Credit where due e630
  Federal reorganization approved and army work condemned n792
  Public construction and American Engineering Council. Lee and Wallace 1689, editor's note 690
American Institute of Steel Construction:
  Large rolling mills become members... n733
  Pittsburgh meeting n510
American Public Health Assn.:
  Washington meeting n538
American Railway Engineering Assn.:
  Conventions canceled because of conditions n238
American Road Builders Assn. — officers nominated n761
American Society for Testing Materials:
  Timber and lumber reviewed at meeting. n633
American Society of Civil Engineers:
  Atlantic City meeting n450
  Atlantic City meeting discusses planning and economics 443
  Wanted: data on dam uplift ..... l 112
  Western Engineering problems discussed at meeting 50
American Society of Municipal Engineers:
  Chicago chapter formed n732
American Water Works Assn.:
  Wisconsin Section meeting n541
American Water Works Assn. and North Carolina Sewage Works Assn.—meeting. n576
American Welding Society:
  Metal structure and stress in welded joints 446

AQUEDUCTS

  Colorado River aqueduct:
    Bids accepted for power n116
    Bids for first work n480
    Bids on San Jacinto tunnel n696
    Bonds n24, n663
    Force account authorized n795
    Last obstacle removed e600
    Loan opposed n538
    Loan suit rejected n604
    Tunnel contract n358, n732
    Wage rates for work n483
  Los Angeles aqueduct. See under Colorado River.
  Moffet pioneer tunnel to be used as aqueduct n791
Architectural League honors civil engineers. n763
Asphalt:
  Truck-mounted plant for bituminous mix. York & Hack *531
Associations:
  Program problem e234
  Tide turns e730
Auditoriums:
  Acoustical improvement in Louisville auditorium 194
  Manufacture of sound absorbing materials as new industry 308

B

Baker, M. N., retires from Engineering News-Record n23

Beams:
  Checking the design of rectangular timber beams. C. K. Clausen 471
  Principles and practice in welded joint design. G. D. Fish *773
Bins. See Storage bins.

BONDS

  Alabama permits service charges for sewer and water financing n790
  Ballard Bridge reconstruciton proposed in bond issue n238
  Baltimore improvement bonds not to be put to vote n416
  California bids for bonds for flood control project n59
  California court upholds water district issue n24
  Colorado River aqueduct bonds to be bid. n663
  Golden Gate—efforts to prevent construction end n236, n264
  Greeley, Colo., gets money for pipe line n328
  Investor's view of water works bonds.. 347
  Is municipal credit sound? C. H. Chatters 738
  Kentucky bond issue unconstitutional.. n22
  Moffat Tunnel bonds declared legal.... n760
  Philadelphia bridge bond bid rejected.. n361
  Pine Canyon Dam bonds sold n267
  Road bond issue up in Oklahoma..... n209
  St. Louis considering "made work" bond issue n58
  San Francisco sells bonds for construction n416
  San Francisco to vote on relief bonds.. n88
  San Francisco votes relief bonds..... n301
  Texas legislature to consider road bonds. n300
  Texas to assume interest on bonds of road district n391
  Waterway bonds to be sold n238

BOOK REVIEWS

  Administration of the gasoline tax in the U. S. F. G. Crawford..... 628
  Behemoth, the story of power. Hodging & Magoun 324
  Das Krafteplan-verfahren. J. D. Gedo. 629
  Der Baugrund. M. Singer 476
  Design of steel buildings. H. D. Hauf.. 628
  Destruction of timber by marine organisms in the port of Sydney. Iredale, Johnson & McNeill 476
  Economics of construction management. J. L. Harrison 628
  Emergency work relief. Colcord, Koplovitz & Kurtz 476
  Engineering 756
  Engineer's year book for 1932..... 202
  Farm and village housing 757
  Federal and state tax systems..... 202
  Graphs for engineers and architects. D. H. Lee 202
  Holding company. Bonbright & Means.. 84
  Home ownership, income and types of dwellings 757
  Housing and the community-home repair and remodeling 476
  Housing objectives and programs..... 757
  Hoyer-Kreuter technological dictionary... 84
  Hydraulics of open channels. B. A. Bakhmeteff 84
  Kritische Betrachtung von Flach und Pfahlgrundungen besonders in dem Hafenplatzen Niederlandisch-Indien. Wilhelm Loos 476
  Management of small municipal lighting plants. F. L. Bird 324
  Materials and methods of architectural construction. Gay & Parker 628
  Modern sewage treatment. T. P. Francis 202
  Our wonderland of bureaucracy. J. M. Beck 476
  Planning and building the city of Washington. F. H. Newell 84
  Principles of public utilities. Jones & Bigham 324
  Principles of reinforced concrete construction. Turneaure & Mauer..... 324
  Puentes de fabrica y hormigon armado. J. E. Ribera 202
  Pumping machinery. G. F. Westcott.... 756
  Recent technological developments and the municipally owned power plant. P. J. Raver 84
  Refrigerating data book and refrigerating catalog 628
  Refrigeration. J. A. Moyer 628
  Regional plan of the Philadelphia tri-state district 325
  Reinforced concrete designers' handbook. C. E. Reynolds 628
  Stresses in simple structures. Urquhart & O'Rourke 324
  Urban land uses. Harland Bartholomew 756
  Vibration prevention in engineering. A. L. Kimball 756
  Water purification control. E. S. Hopkins 202
  Who's who in government 202
  Wichert Truss. D. B. Steinman 324
Boston:
  Boston-East Boston vehicle tunnel, pt. 2 *39
  Underpass carries parkway beneath car-track street. J. W. Parker..... *322

BRICKS AND BRICKWORK

  Dearborn sewer system has reinforced brick masonry. C. H. Fork..... *749
  Reinforced brickwork e758
  Reinforced brickwork: a new construction material *71
Bridge accidents and failures:
  Quebec cantilever bridge—old teachings.. e327

BRIDGE CONSTRUCTION

  Barrel arch bridge without spandrel walls *293
  Bridges go west e479
  Caisson of Mid-Hudson bridge at Poughkeepsie—contractor loses suit..... n481
  East Pittsburgh concrete bridge..... *87
  57th St. bridge—unworthy procedure.. e114
  Klingle Valley bridge built in three strips. H. C. Whitehurst..... *784
  Littlebelt bridge in Denmark uses open caisson method. Kai Kaat-Jensen.... *427
  New Orleans bridge work to start..... n419
  New York Port Authority opposes 57th St. bridge n88
  Ohio survey shows many new bridges needed n359
  Red River bridge plans approved..... n25
  Red River bridge work resumed..... n540
  Rock Island lift bridge erected on old fixed spans *227
  San Francisco-Oakland Bay bridge..... *457
  Steel piles for highway bridges in Nebraska discussed by civil engineers. 51
  Timber bridges e234

BRIDGE DESIGN

  Bascule-arch span in Philadelphia toll bridge *253
  Bascule railway bridge has one piece rail lock. S. M. Smith *294
  Car-ferry landing bridge has tank floats for counter weights..... *86
  Carquinez Bridge largest bridge west of Detroit. C. Derleth, Jr..... 627
  Concrete bridges in Texas discussed by engineers 51
  Continuous girder bridge for Cincinnati railway terminal. T. P. Young.... *110
  Continuous-grider concrete bridge in Houston. H. D. Hilborn *36
  Cuyahoga cantilever bridge *747
  Denmark to build Europe's longest bridge n61
  Model study better than calculation.... e296
  Model study of arch bridge for stresses. F. L. Plummer *282
  Old timber bridges. C. K. Allen..... l *753
  Oregon timber bridges. C. B. McCullough. *213
  Quebec cantilever bridge—old teachings. e327
  Rock Island lift bridge erected on old fixed spans *227
  San Francisco engineers declare competence in bascule design n26
  Suspension bridge for World's Fair amusement e174
  Timber bridges e234
  Timber bridges in Oregon discussed by engineers 52
  Transporter suspension bridge for World's Fair. W. G. Grove..... *172
  Vertical-lift bridge in Great Britain... n299
Bridge floors:
  Light floors for bridges e630
  Open-mesh steel deck for Seattle bascule. *824

BRIDGE RENEWALS AND REPAIRS

  Ballard Bridge, Seattle, bond issue.... n238
  Hand operated tremie tube for placing concrete under water. C. J. Brownell. *260
  Replacing plate girder bridges by inverting the spans. T. Kuroda..... *497
  Vancouver Commissioners to rebuild bridge over Burrard Inlet..... n697
Bridge stresses:
  Check levels made on Ft. Snelling-Mendota bridge. W. H. Wheeler.... 371

BRIDGES

  Australia:
    Barrel arch bridge without spandrel walls *293
    Sydney Harbor bridge cost exceeds contract n791
  Cimarron River bridge ..... n *300
  Cleveland:
    Cuyahoga cantilever bridge..... *747
    Model study of arch bridge for stresses. F. L. Plummer *282
  Denmark:
    Littlebelt bridge uses open caisson method. Kai Faat-Jensen *427
    To build Europe's longest bridge... n61
  Detroit:
    Wabash railway bridge has one piece rail lock. S. M. Smith..... *294
  East Pittsburgh, Pa.:
    George Westinghouse concrete bridge. *67

*Illustrated; a, abstracts; e, editorials; l, letter; n, news

Fort Snelling-Mendota bridge:
Check levels made. W. H. Wheeler... 371
Shrinkage in bridge. C. S. Whitney..1507
Great Britain:
First vertical lift bridge.....n299
Houston, Tex.:
Continuous-girder concrete bridge. H. D. Hilborn *36
India:
Through-truss railway bridge.....n*117
Knoxville, Tenn.:
Henley bridge n*143
London:
Lambeth bridge opens n236
Long Island Park system plans suspension bridge n179
Mississippi River:
Arsenal Island bridge n*603
Mississippi River bridge at Savanna, Ill. n*733
New Orleans:
Loan approval n698
New York City:
East River bridge traffic 772
57th St. bridge—unworthy procedure.e114
57th St. bridge opposed by Port Authority n88
Hudson River bridge—reduced cross-river traffic e658
Hudson River bridge shows profit....n605
Hudson River bridge traffic n510
Philadelphia:
Bascule-arch span in toll bridge.....*253
Pittsburgh, Pa.:
George Westinghouse bridge *67
Rio Grande—two more bridges planned. n25
Rock Island:
Lift bridge erected on old fixed spans.*227
St. Lawrence:
Contracts let for Lachine bridge....n735
Near Montreal—highway bridge to be built n208
Railway bridge to be decked for highway n635
San Francisco:
Bids called for piers n694
Golden Gate bids n484
Bonds approved n116
Contracts awarded n572
Efforts to prevent construction end. n236, n264
Encouraging signs e326
Work put up for new bids.....n388
Work to begin n301
Oakland Bay Bridge construction...*457
Legislation n481
Vancouver, B. C.:
Burrard Bridge opened n91
Burrard St. bridge n*481
Vicksburg Bridge & Terminal Co. seek loan n605
Washington, D. C.:
Klingle Valley bridge built in three strips. H. C. Whitehurst *784
Wooden truss highway bridge to be preserved n*178
Buffalo:
New transit plans n267
Building accidents and failures:
Construction neglects safety and pays for it 646
Ohio sues Columbus Gas Co. for damage to building n178

BUILDING CONSTRUCTION

Adding stories to old concrete buildings. Henry Bittman *472
Building change orders and general costs. R. P. Wallis 167
Cleveland begins census of real property 533
Delay in planning buildings now means extra cost. Eams & Wolfe *374
Earthquake-resistant construction. Bailey Willis 532
Employment through federal building of new factory towns. W. S. Moody....1 83
Erecting roof trusses in Rockefeller Center *614
Fast-truck concrete haul for Meadowbrook Hospital. W. J. Barney.....*778
Metal sheathing for houses *166
Model tests of pier action. F. R. Harris.1627
Rockefeller Center materials and equipment 590
Rockefeller Center's organization and construction supervision 598
Skyscraper steel erection in RCA building *618
Start of building construction in Japan. n25
Straightening leaning building walls. E. H. Krautheim *382
Strike on Pittsburgh Post Office settled..n393
Wood floor design for masonry wall buildings. N. B. Green *491

BUILDING DESIGN

Elevator problem of the tower building. C. F. Scott *317
Four sided frame bents carry 19 story tower in Dayton. N. J. Bell.....*248
Modern laundry building *682
Modern solutions of the high rise elevator problems. C. F. Scott *350
New York Hospital-Cornell Medical College opened n*298
Philadelphia Savings Fund Society Building—cost more, worth more....e570
Philadelphia Savings Fund Building is unique in design and construction....*549
Radio City's three theaters *583
RCA building — skyscraper plumbing. C. M. Wilson *593
RCA building of 69 stories *587
Rockefeller Center e600
Rockefeller Center plan *579
Six-dollar housing in concrete *9
Skyscraper factories e20
Skyscraper plumbing e600
Sliding and swinging windows for commercial buildings *220
Starrett-Lehigh 19-story factory over railroad yard *1
Two-story houses for low income group. J. E. Conselman *8
Understressing and notch sensitiveness in fatigue. J. B. Kommers 353
Welded joints for seismic stresses in tall building. H. H. Tracy.....*312
Wind resistant:
Studies of building sway e262
Wood floor design for masonry wall buildings. N. B. Green *491

BUILDINGS

Bismarck, N. D.:
Design for state capitol n*22
Boston:
New station for Boston Elevated. L. E. Moore *527
Chicago:
Post Office has concrete partition walls *283
World's Fair agricultural building..n*265
Dayton, Ohio:
Mutual Home & Savings Assn. building. N. J. Bell *248
Detroit:
Post office foundations. H. A. Christie *105
Jackson, Miss.:
Gas house district made municipal center n*237
Long Beach, Cal.:
Auditorium—drilling equipment for piles. A. J. Smith *129
Los Angeles:
Southern California Edison building. H. H. Tracy *312
Monroe, Mich.:
St. Mary College and Academy. W. G. Mansuy *650
New York City:
Housing development financed by R.F.C. loan n*573
Meadowbrook Hospital—concrete haulage. W. J. Barney *778
Modern laundry building *682
N. Y. Hospital-Cornell Medical College opened n*298
Radio City's three theaters *583
RCA building—steel erection *618
RCA building of 69 stories.....*587
Rockefeller Center — erecting roof strusses *614
Rockefeller Center main building topped out n*389
Rockefeller Center materials and equipment 590
Rockefeller Center Music Hall.....n*793
Rockefeller Center plan *579
Starrett-Lehigh factory *1
Philadelphia:
Philadelphia Savings Fund Building is unique in design *549
Pittsburgh:
Steel erection on new post office.....n*59

BUSINESS CONDITIONS

Active foresight e508
Causes of depression. D. B. Luten.....1535
Causes of depression. R. W. Powell....1385
Causes and remedies of the depression. J. V. Nimmo 1233
Depression economics. R. W. Powell..1729
Two essentials to recovery e263
Unemployed capital. J. R. Pranin....1569

C

CABLES

Ditching and laying plant for underground cable *74
Failures of cable kills three n330
Machine constructs cable line from trench to backfill. M. A. Robbin.... *76

CABLEWAYS

Hoover Dam cableway bids n417
Record-size cableway for Hoover Dam..*408

CAISSONS

Caisson excavator. H. A. Christie.....*105
Concrete lagging used for deep-well caissons *563
Contractor loses suit over caisson at Poughkeepsie n481
Littlebelt bridge in Denmark uses open-caisson method. Kaai Kaat-Jensen..*427

CANALS

Albemarle & Chesapeake canal—tidal lock preserves game n*89
All-American canal to be paid for by Imperial Irrigation District n696
Beauharnois earth bank protected by riprap. J. A. Knight *275
Eagle Pass, Tex., hydro plant built on irrigation canal *377
Illinois Waterway will be ready for 1933 .....*402
Panama:
See also Dams, Madden.
Panama Canal—pipe laid across canal by use of cable support. A. L. Hertz....*562
Progress made on intercoastal canal....n239
Raritan Canal to be abandoned n714
Rio Grande irrigation canal *173
St. Lawrence waterway both opposed and endorsed n201
Trinity River project—adverse report to be appealed n25
Water in terms of canal capacity discussed by engineers 53
Welland Canal opened n178

CEMENT

Development of low heat cement for mass concrete. R. W. Carlson..... 461
Effect of cement composition on mortar strength. Woods, Starke & Steinour..*435
Heat evolved by cement during hardening. Woods, Steinour & Starke.... 404
Hoover Dam cement specifications. J. L. Savage *558
Low-heat cement e571, 637
Portland cement statistics, 1931..... 528
Special low heat cement for Pine Canyon Dam 419

CHANNELS

Analyzing hydraulic models for effects of distortion. M. P. O'Brien..... 313
Connecting Stockton with the sea. W. A. Wood, Jr. *183

CHICAGO

Dewatering and incineration of sludge under test 77
Diagonal thorofare completed.....n*761
Highway policies defined for metropolitan Chicago 186
Pipe sewer failures. P. E. Green..... 18
Progress in filtering the water supply..*137
Sanitary District blames delay on tax tangle n602
Sanitary District's report to Supreme Court on sewage schedule.....n58, n602
Street-traffic studies *612
Tax muddle clearing e601
Water diversion to be reported on.....n762
Chicago World's Fair. See Exhibitions.

CITIES

Better bookkeeping e356
City manager government recommended for Reno n119
Cost for 1930 ..... n88
Efficiency in city administration e21
How can city costs be lowered? C. E. Ridley pt. 1 13, pt. 2..... 46
Is municipal credit sound?..... 738
Jackson gas house district made municipal center n*237
Organic improvements in government.. e57
See also Municipal Government.

CITY PLANNING

Civil engineers' meeting discuss..... 443
Cleveland Engineering Society maintains regional planning division.... 290
Cleveland's traffic survey plan. R. C. Chaney *305
Hold to standards! e296
Logic in planning e328
Massachusetts planning progress..... 38
Rockefeller Center plan *579
Street-widening experience in Akron. E. A. Kemmler *89
Urban land policy discussed at meeting.n606
Clamp, form *578
Cleveland:
Begins census of real property..... 533
Takes stock e537
Cleveland Engineering Society:
Maintains regional planning division.... 290
Coast erosion and protection:
New Jersey towns to study beach protection n697
Cofferdams:
Permanent cofferdams for Hoover Dam..*709
Colorado River. See Dams, Hoover.

COLUMNS

Adding stories to old concrete buildings. Henry Bittman *472
Concrete columns with large bars offer advantages. Thor Germundsson.....*277
Factory of 19 stories over railroad yard *1
Compressed air and air tools:
Air compressor mounted on tractor....*241
Oiling devices and lubricants for air tools. J. D. Clower *432

CONCRETE

Adding stories to old concrete buildings. Henry Bittman *472
Accelerated absorption tests on concrete 521
Alkali effect on concrete study..... n25
Belt conveyors distribute concrete for Wards Island sewage plant.....*517
Belt conveyors place concrete for Vermunt dam in the Alps. Bruno Widman.*126
Bituminized-cement concrete. L. F. Harza 1754
British to study concrete 16
Cement-water ratio. I. Rosov 1201
Circular bins for storage of grain (unit prices). H. H. Frenzel.....*291
Columns with large bars offer advantages. Thor Germundsson *277
Cores reveal effectiveness of paving dummy joints (unit prices). H. F. Faulkner *232
Development of low heat cement for mass concrete. R. W. Carlson..... 461

*Illustrated; a, abstracts; e, editorials; l, letter; n, news

Diversion tunnel lining for Hoover Dam *715
Westinghouse bridge longest arch in America (unit prices) *67
Fort Snelling-Mendota bridge shrinkage. C. S. Whitney .....l 507
Flow of concrete under stress—check levels made on Ft. Snelling-Mendota bridge. W. H. Wheeler 371
Gantry concreting plant cuts group building costs (unit prices) *399
Girderless concrete slabs in Elmira grade crossing. M. Hirschthal *678
Hand-operated tremie tube for placing concrete under water (unit prices). C. J. Brownell *260
Mass concrete developments e415
New Orleans seawall built on precast piles (unit prices). H. A. Christie...*33
Partition walls of concrete in Chicago Post Office *283
Pile-casting yard for highway bridges..*743
Portland, Ore., adopts revised code for concrete construction n696
Precast concrete lagging used for deep-well caissons *563
Reservoir at Provo, Utah, has copper expansion joints (unit prices). C. J. Ullrich *62
Six-dollar housing in concrete *9
Superstructure built on old timber piling (unit prices). T. D. Hunt.....*195
Thin concrete diaphragm protects Ringedal Dam (unit prices). C. G. Groner..*498
Vehicle tunnel under Boston harbor (unit prices) pt. 2..... *39
Visualizing concrete economy in terms of strength. Inge Lyse 109
Concrete aggregates:
Autoclaving proves unsuitable for testing aggregate durability 49
New methods of proportioning concrete for road work. W. W. Zass 247

CONCRETE MIXERS

Fast-truck concrete haul for Meadowbrook Hospital. W. J. Barney *778
Hetch Hetchy project has portable aggregate plant. H. V. Eastling.....*654
Madden Dam concreting plant. A. J. Ackerman *671
Smaller agitator trucks e788
Concrete reinforcement:
Reinforcement-bar specifications 560

CONSTRUCTION

A.G.C. meeting of governing boards... 474
Building change orders and general costs. R. P. Wallis 167
Building construction conference..... 473
Building cycles charted from 1875 to 1932 567
Bureau of the Census reports 321
Business side of construction...28, 148, 270, 422, 544, 666
Construction advances e479
Construction League meeting 475
Cost of federal public works (tables) 1920-1931 93
Costly construction e56
Danger in short selling e174
Delay in planning buildings now means extra cost. Eams & Wolfe.....*374
Detroit and construction e737
Every cent to labor e21
Federal building program approaches peak n179
For a new spirit e386
Getting work started through the R.F.C. Paul Wooton 348
Great responsibility e204
Helpful work postponed e692
Hoover Dam preliminary construction..*713
Investment rating of building proposed..n484
Less federal work e759
Long-time planning progress e115
Money and construction e386
Neglects safety and pays for it..... 646
New factories for old e386
1932 construction—six months figures..55, 56
Ohio Commission increases compensation rates n90
One sign of convalescence e536
One way to save e415
Proposed reductions in budget n732
Public agencies prepare applications for federal funds n142
Public construction and American Engineering Council. Lee & Wallace l 689, editor's note 690
Public and business finance e449
Relief to the fore e414
Road of progress e767
Signs of new activity e140
Sublimating team haulage e234
Take stock! e174
Work for the fall e262
Your home town e509

CONSTRUCTION EQUIPMENT

Automatic batching equipment.....*333
Belt conveyors distribute concrete for Ward's Island sewage plant *517
Belt conveyors place concrete for Vermunt dam in the Alps. Bruno Widman *126
Cable laying machine. M. A. Robbin.. *76
Cable laying train *74
Cement batcher *765
Conveyor rollers *486
Coupling up equipment e86
Earth-boring machine for installing water pipes *608
Fabriform loader *515
Heavy-duty dragline *765
Hydraulic bulldozer *333
Light shovel easily transported.....*796
Machine places riprap at Beauharnois. J. A. Knight *275
New equipment horizons e141
Plant planning e659
Portable belt conveyor *303
Portable belt feeder for unloading hopper cars *578
Portable conveyor *27
Scale for bulk cement *486
Screw conveyor for cement *269
Truck fitted with A-frames and winches handles form panels in aeration tanks. Ward's Island sewage plant *520
Twin drill carriages and power shovel for building Swift River dam.....*107
Vibrating screen loader *181
Wagon-haulage equipment for levee building. J. C. French.....*215
Construction League of the U. S.:
Code of bidding proposed for construction 681

CONSTRUCTION MATERIALS

Buy at home? e758
Current prices..30, 150, 272, 424, 546, 668
Metal sheathing for houses.....*166
Precedent maintained e600
Reinforced brickwork *71
Rockefeller Center materials and equipment 590
Sane views are returning e140
Supply dealer's changing place in materials distribution. O. F. Rost..... 493
Timber for falsework e509
Contracting:
High water found justification for delay in contract work n206

CONTRACTORS

A.G.C. meeting of governing boards..... 474
Average bid advocated. C. A. Gould...l 754
Bid peddling. R. A. MacMullan.....l 754
Bid shopping e414
Building change orders and general costs. R. P. Wallis 167
Careless bidding e449
Code of bidding proposed for construction 681
Collection of bidding fee on San Gabriel Dam abandoned n636
License law planned for Iowa.....n238
License law in Ontario n179
License required on federal work in Oregon n62
Making a low bid pay e536
Maryland removes ban for outside contractors n483
San Francisco building trades to get wage cut n636
Contracts:
Technical services cooperate to cut building costs. W. G. Mansuy.....*650
Cranes:
Gantry concreting plant cuts group building costs *399
Hydraulic crane on tractor *333
County government e692
Culverts:
Corrugated half circle culvert *333
Laminated wood for culverts *455

D

DAMS

Alexander Dam:
Beach drainage safeguards dam. J. B. Cox *466
Earth dams in Hawaii. M. M. O'Shaughnessy .....l 787
New evidence e478
Allegheny River dam and two locks..... 700
Arizona code of dam construction.....e788
Arizona publishes a code for building dams 771
Aswan Dam being raised 611
Coolidge Dam:
Automatic sector gates for spillway. Paul Baumann *163
Corewall tilts when Oued Kebir reservoir fills. F. A. Noetzli *529
Data on dam uplift wanted. Am. Soc. C.E. .....l 112
Facing dams with steel plates. J. R. Wemlinger .....l 233
Fifteen Mile Falls Dam:
Earth-pressure testing machine used in connection with retaining wall design. Karl Terzaghi *365
Four dams in construction in southern California. J. I. Ballard *564
Gibson Dam—care and workmanship...e204
Gibson Dam—uplift pressure measured. I. E. Houk *196
Hoover Dam:
Appropriation bill e86
Bidding and planning *705
Bulkhead gate for tunnel n*483
Cement specifications. J. L. Savage.*558
Colorado River Board approves design of dam *711
Colorado River Board makes final report n661
Company would surrender contract for Hoover power n329
Contract for penstock pipes..... n60
Diversion starts n603, n*633
Diversion tunnel lining *715
Expense or investment e788
First stage e730
First stage ends e630
Flood delays work on tunnels n298
Future schedule (chart) 723
General Sibert resigns n538
Laboratory research. Elwood Mead..*724
Last minute views *728
Penstocks installed *79
Perennial charges e296
Permanent cofferdams *709
Preliminary construction *713
Record-size cableway *408
River diversion *708
River diversion preparations *622
Spillways and other elements *720
Ten-year history *701
Hoover Dam notes.....24, 61, 119, 145, 208, 267, 331, 360, 483, 697, 793
Los Angeles flood control district San Gabriel Dam No. 1 bids called for...n603
Los Angeles flood control system to have check dams n604
Madden Dam:
Clay grouting. F. H. Kellogg.....*395
Concreting plant. A. J. Ackerman...*671
Engineering board to study n358
Flood in Chagres River delays work..n660
Progress made n*390
Spillway design tested by model.....*42
Work resumed after floods n*791
Mexico—200-year-old masonry dams in use. Julian Hinds *251
Mitchell Dam:
Power Commission makes ruling on water power costs 279, n59
Oued Kebir Dam:
Sound engineering principles violated. L. F. Harza .....l 786
Owyhee Dam:
To be dedicated n61
Pardee Dam:
Contraction joints grouted a second time. F. W. Hanna *431
Pine Canyon Dam:
Bonds sold n267
Included in Los Angeles aqueduct system n417
Special low heat cement for construction 410
Suits threaten work n791
Ringedal Dam:
New face on an old dam.....e509
Thin concrete diaphragm protects face. C. F. Groner *498
Unprecedented percolation record. Joseph Jacobs .....l 729
Rockfill:
Corewall in rockfill dam tilts when reservoir fills. F. A. Noetzli.....*529
Saale River Dam:
Novel concrete distribution *382
St. Louis applies for power dam on Mississippi n118
San Francisco:
San Andreas fault dams and the earthquake of 1906. D. C. Henny.... 385
Three dams on San Andreas fault have resisted earthquakes *218
San Gabriel Dam No. 2, abutment sluicing. E. C. Eaton *311
San Gabriel Dam No. 1:
Advertised for bids n22
Bids n794
Bids for quarrying n482
Lone bid rejected n177
New bids called for n239
Second lot of bids rejected n390
Unfortunate combinations e204
Steel dams—force of habit e658
Steel faced dams. M. M. O'Shaughnessy .....l 113
Steel faced and all steel dams. M. N. Baker, W. B. Storey, J. B. Girand..l 505
Steel faced and all steel dams. W. B. Storey, J. B. Girand .....l 505
Steel joints in rockfill dams. M. M. O'Shaughnessy .....l 657
Study of pressure under dams discussed by engineers 53
Tests for hydraulic fill dams 53
Uplight pressure measured at Gibson Dam. I. E. Houk *196
Water supply dam for Bradford, England n*207
Why not steel dams? C. M. Stanley.....*652
Why use corewalls? L. E. Ayres.....l 786
Davis, Arthur L. n513
Detroit:
Construction and Detroit e737
Distribution:
Supply dealer's changing place in materials distribution. O. F. Rost..... 493
Domes. See Roofs and roofing.

DRAINAGE

Beach drainage safeguards Alexander Dam. J. B. Cox *466
Dredge-made island drained for Mount Vernon highway *287
Goose Lake drainage project 456
Reclamation of the Zuiderzee. A. L. Shaw *639

DREDGES AND DREDGING

Dredging of cut-off in Mississippi River begun n451
Launch turbine dipper dredge n26
New Jersey contract 122
Power plant in small dredge *17

DRILLS AND DRILLING
Gasoline portable drill *181
Pneumatic feed rock drill *121
Rotary drill bores holes for timber piles in clay. A. J. Smith *129
Safety clamp for drills *27
Twin drill carriages used for Boston water supply tunnel *107

E

Earth fill:
Slipping road fill held up by steel suspenders. T. H. Cutler *684

EARTHQUAKES
Dams on the San Andreas fault. D. C. Henny ..... l 385
Earthquake-resistant construction. Bailey Willis 532
Earthquake safety e537
Getting the facts e296
Structural hazard of earthquakes measured by new instruments. N. H. Heck *288
Three dams on San Andreas fault have resisted earthquakes *218
Welded joints for seismic stresses in tall building. H. H. Tracy *312
Electric power transmission:
Wood pole line electric distribution system, Piqua, Ohio 364

ELECTRIC RAILWAYS
Boston Elevated adds new station. L. E. Moore *527
Chicago to keep cars on Lake Shore Boulevard n762
Improved riding qualities for street cars 460

ELEVATORS
Improving the skyscraper e326
Modern solutions of the high-rise elevator problem. C. F. Scott *350
Ship elevator built for Berlin-Stettin canal n*177
Tower building elevator problems. C. F. Scott *317

ENGINEERING
Construction efficiency e56
Personal contact restored e205
Trend of progress in engineering practice. H. S. Crocker 78
Engineering Council. See American Engineering Council.

ENGINEERS
California board broadens structural engineer title n390
Examiners from many states meet in New York n416
National registration e449
Right approach e693
Salaries in public service e536
Saving cost in government by private design. W. H. Wheeler ..... l 173
Spread work for engineers. F. D. Hughes ..... l 626
Working for the public e20

EXCAVATING MACHINERY
Boring machine digs wells for concrete piers. H. A. Christie *105
Gas-electric excavators. David Stoetzel. *403
Machine constructs cable line from trench to backfill. M. A. Robbin *76
Power shovel used for Boston water supply tunnel *107
Shovel *394
Shovel-crane dragline *121
Slackline cableway machine *394
Trench excavator for underground cable line construction *74

EXHIBITIONS
Chicago World's Fair — ten buildings started n484
Chicago World's Fair to have transporter suspension bridge. W. G. Grove. *172
Idea crystallized e141
World's Fair agricultural building n*265
Extensometer *421, *578

F

Federal Power Commission:
New River development n481
Niagara River dispute heard by commission n575
Power act is upheld e141
Power Commission urges control of holding companies n88
Ruling on allowable water power costs. 279, n59
Ferries:
Car ferry and landing projected for Yangtse-Kiang China 492
Tank float for car-ferry landing bridges. *66

FIRE PREVENTION AND PROTECTION
Fire hydrant *363
Fire test of steel-joist floors. Frank Burton ..... l 656
RCA building—fire protection system. C. M. Wilson *597

FLOODS AND FLOOD PROTECTION
California seeks federal aid for flood work n25
Control work not affected by cost cut.. n264
Look out for floods e570
New flood formulas based on same principle as unit graph. H. K. Barrows.. 223
Rio Grande bridge spans washed out by floods n301
Rio Grande flood control proposed..... n764
Rio Grande floods in September..... *557
Rio Grande valley damaged by flood..n*329
San Gabriel—third dam abandoned..... n417
Two types of floods in middle Rio Grande valley. R. G. Hosea *100
Work funds allotted n361
Yangtse River flood. Ludwig Brandt.... *133

FLOORS
Accumulated experience e204
American standard forms for concrete construction floors 645
Experience with flooring in industrial buildings. O. C. Spurling *191
Fire-test of steel-joist floors. Frank Burton ..... l 656
Floors of industrial buildings. Fisher, Vaksdal, Condron ..... l 233
Grating of tapered bars *212
Wood floor design for masonry wall buildings. N. B. Green *491
Forests and forestry:
Forest fire losses decrease 134
Forest road funds allotted n328

FOUNDATIONS
Boring machine digs wells for concrete piers. H. A. Christie *105
Compressibility of clay increased by remolding. Arthur Casagrande *159
Concrete piles tested for uplift and bearing *104
Construction of gasholder on bed of muck *746
Cylinder piles driven 140 ft. to rock for Starrett Lehigh Building. W. T. McIntosh *5
Foundation design for an elevated tank. M. B. Meyer *644
Foundation soil overloading shown by penetration test. Stephenson & Feingold *161
Four-sided-frame bents carry 19-story tower in Dayton. N. J. Bell..... *248
Jack-frame underpinning. J. L. Washbourne *280
Newark to build subway on bed of old Morris Canal. D. J. Heuer..... *243
Rotary drilling equipment for piles to support auditorium at Long Beach, Cal. A. J. Smith *129
Soil action under load shown by test. D. P. Krynine *782
Soil-loading test practice in Europe. Karl Terzaghi 158
Strength of clay. D. P. Krynine..... l*729
Freeman, John R. e448, dies..... n451
Fritz, John, medal awarded n540

G

GARBAGE AND REFUSE DISPOSAL
Baltimore contract-operated destructor plant to revert to city in ten years.. 231
Baltimore lets ten-year contract n91
Bidding plan for Montclair scavenger service n574
Detroit calls for bids on incinerators..n637
Detroit incinerator plants under consideration n452
Incinerators and engineering e570
Municipal officers discuss problems.... n452
New York awards contract for two incinerators n635
San Francisco has new plan for disposal. n59
San Francisco plans put up to voters..n483
San Francisco votes on refuse collection. n662
Washington, D. C., to use incinerators to burn rubbish *555
Gates:
Automatic sector gates for Coolidge Dam spillway. Paul Baumann *163

GIRDERS
Continuous-girder concrete bridge in Houston. H. D. Hilborn *36
Long continuous girders at Cincinnati terminal. T. P. Young *110
Replacing plate-girder bridges by inverting the spans. T. Kuroda *497
Government reorganization e731
Governmental economy. L. F. Buff..... l 113
Gravity base station 232

GROUTING
Clay grouting at Madden Reservoir. F. H. Kellogg *395
Increased power e415
Pardee Dam contraction joints grouted a second time. F. W. Hanna *431

H

Hangars. See Aeronautics.

HIGHWAY ADMINISTRATION
Indiana township roads pass to county control n367
Limits on highway use e335
Montana law to limit road use invalid. 332
New highway regulations attacked and defended n330
Not unrestricted use e332
Ohio limit on use of highways before Supreme Court n695
Policies defined for metropolitan Chicago. 186
Regulations recommended by highway officials n660
Road administration revamped in Indiana. B. H. Petty 384
Texas law regulating highway use upheld by Supreme Court n694
Texas regulation before Supreme Court. n512

HIGHWAY CONSTRUCTION
Asphalt overflow removed by luting brick *651
Bituminized-cement concrete. L. F. Harza ..... l 754
Bituminized-cement macadam road in Massachusetts *463
Bituminized cement macadam road experiments 400
Blue Ridge Mountain highway..... *10
Bonnet Carre spillway crossing award sustained n144
Building a low-cost base for a low-cost road. J. S. Crandell *751
Cement grouted macadam roads in Europe. Otto Graf *400
Cement-grouted road in New York. 371, e387
Cement macadam road gets a new trial.. 437
Cement penetration roads in Australia. J. T. Cavanagh *103
China needs light railways 745
Forest road funds allotted n328
Grand Trunk relocation on Detroit-Pontiac line *501
Great Smoky Mountain National Park highways *45
Half built roads e234
Hand labor—no reason for excitement.. e297
Hand labor specified for many operations under emergency program..... n142
Hard facts on hand labor e174
Illinois contract annulled because of labor trouble n143
Louisiana contracts ordered resumed... n264
Low cost cement roads e115
Maryland highway work to state contractors only n418
Mount Vernon highway — unwatering process for foundations *287
New fields ahead e508
New Jersey elevated highway nears completion n*360
New methods of proportioning concrete for road work. W. W. Zass..... 247
New Orleans to Gulf Coast highway—call for new bids n696
Overpass aids traffic in Washington, D. C., park. D. H. Gillette..... *380
Pedestrian tunnels in San Diego. T. E. Kenny *490
Production and costs charts speed road grading. Mack Graham *200
Roadbuilding in jeopardy e730
Rubber roads in Europe 617
Slipping road fill held up by steel suspenders. T. H. Cutler..... *684
State road mileages 677
Surfacing:
Cotton cloth used to waterproof road surface. Arnold Davis *194
Gravel surfacing and oil mat, Idaho.. 242
Morris County road. W. C. Spargo.... *438
New road mix method used in Ohio.. *292
Sealing cracked asphalt for resurfacing. B. P. MacWhorter 613
Texas military highway to be continued n24
Traffic service first e789
Underpass carries parkway beneath car-track street. J. W. Parker..... *322
Wayne County, Mich., rushes work for winter employment n605

HIGHWAY DESIGN
Blue Ridge Mountain highway..... *10
Boulevard built over subway in Newark. D. J. Heuer *243
Not for profit e20
Parabolic vertical curves. A. D. Millard. l 753
Parabolic vertical curves for highway grades. M. W. Furr *496
Unsymmetrical street crowns. M. W. Furr ..... l 295

HIGHWAY ECONOMICS
Cook County funds diverted to unemployment relief n604
Disappearing township road e262

*Illustrated; a, abstracts; e, editorials; l, letter; n, news

Distribution of federal loan for road-building n116
Gasoline tax—a call to organize e205
Hand labor not extravagant on Michigan roads. C. M. Ziegler 561
Indiana highway bills n267
Louisiana may borrow to complete contracts n59
Louisiana negotiates loan for road contracts n117
Michigan counties to use relief funds on roads n762
Minimum wage scale on relief work set by state highway departments n634
Minnesota court discusses suit to cancel paving contracts n116
New Hampshire to make loans for town roads n237
New Jersey order cut in construction n419
1933 federal aid n790
Ohio considers highway financing n179
Oklahoma legislature—proposed diversion of funds n299
Raids on road funds checked e263
Relief Act money allotted n792
Relief fund to be used for road contracts already let n206
Relief fund two-thirds allotted n572
Relief highway funds e356
Revise your road estimates e140
Road administration revamped in Indiana. B. H. Petty 384
Road officials review progress and problems 625
Success with hand labor e570
Taxation of highway users protested n26
Texas to assume interest on bonds of road district n391
Wage rates set for work under relief act n208, 238
Wage rates for relief work set n301

HIGHWAY EQUIPMENT

Bituminous distributor n*665
Bituminous paver and finisher *608
Concrete paving tamper *121
Distributor for bituminous materials *303
Hot oil truck for road patching. W. W. Shelby *369
Hydraulic bulldozer *638
Leveling hone and planning mixer *292
Machine crushes and screens gravel *211
Mechanical spreader for retreading roads *455
Multiblade grader for road work *303
Portable road material plant *486
Road drag for mixing and leveling *27
Sprayer for asphalt emulsion *609
Surface heater for highways *543
Traffic lane marking machine *665
Truck-mounted plant for bituminous mix. York & Hack *531
Woven wire highway guard *515

Highway guard rail fittings *211

Highway lighting:

Mount Vernon highway lighting *123

Highway maintenance:

Hand labor repairs oldest road in country 222
Hot oil truck for road patching. W. W. Shelby *369

HIGHWAY MARKING

Massachusetts traffic lane marking *157
Permanent traffic lines e570
Signs of dangers e174
White mortar and concrete inlays mark highways *553

HIGHWAY RESEARCH

Meeting of Highway Research Board 687
New research call e631
Research obligation e692

HIGHWAY TRAFFIC

Civil engineers' meeting discuss 443
Cleveland's traffic survey plan. R. C. Chaney *305
Free-moving traffic capacity with unbalanced traffic 98

Hoists and hoisting:

Machine places riprap at Beauharnois. J. A. Knight *275

HOUSING

Building six-dollar houses in concrete *9
Building two-story houses for low income group. J. E. Conzelman *8
Germany to build 300,000 houses annually 44
Gets a loan e571
Home loan bill passed n90
Housing movements e204, e286, e478
Home loan bank bill e86
Housing project for Buffalo n451
Housing project for New York City n208
Limited-dividend housing bill passes in Ohio n450
Low cost housing e386
N. Y. board approves four housing plans n392
New York housing projects may be delayed by new building code n393
Problems at meeting of City planners n632
Two-fold aid to housing e234

Hunt, Charles Warren e114, e118

Hurricanes. See Wind storms.

HYDRAULICS

Abutment sluicing at St. Gabriel Dam No. 2. E. C. Eaton *311
Analyzing hydraulic models for effects of distortion. M. P. O'Brien 313
Iowa Institute of Hydraulics Research constructs addition *411
Rapid filter hydraulics (charts) 647
Siphon-spillway models tested against protypes. H. H. Wheaton *187
Study of pressure under dams discussed by engineers 53
Timely warning on model tests. J. C. Stevens ..... l 506

HYDRO-ELECTRIC POWER PLANTS

Abitibi Canyon project closed on account of funds n91
Abitibi Canyon project to be re-started n484
Ashwan Dam to have power plant 611
Beauharnois plant in operation n418
Beauharnois power plant — machine places riprap. J. A. Knight *275
Bridge River project in British Columbia. C. E. Blee *169
Canadian water power 286
Cobble Mt. development discussed at meeting in New England 412
Dnieper River plant dedicated n*695
Dnieprostroy—first flood over new dam n*90
Eagle Pass, Tex. (Maverick Co.) plant built on irrigation canal *377
Great power plants e479
Illinois receives licenses for power development n792
New River, Virginia plant authorized n539
New River development n481
Niagara River water power dispute heard by Power Commission n575
Power Commission denies postponement of White River license n59
Power Commission makes ruling on water power costs at Mitchell dam 144, 279
Tennessee River permit sought n331
Texas improvement district combines irrigation and power *153
Vermunt plant uses belt conveyors to place concrete. Bruno Widman *126
Water power resources on Snake River. 4
White River plant gets license n696

I

International Assn. of Public Works Officials: Conference n417
Sanitary problems discussed at meeting n452
International Institute of Steel Construction: Organized n329

IRRIGATION

California irrigation districts to be helped by legislation n792
Cameron County, Tex., to construct irrigation works n484
Columbia River development discussed by engineers 52
Eagle Pass, Tex., hydro plant built on irrigation canal *377
Egyptian government will build works on upper Nile n60
Euphrates River in Iraq to have off-take n791
Imperial Irrigation will pay for All-American Canal n696
Merced Irrigation District studies refinancing n452
Texas improvement district combines irrigation and power *153

J

Joints:

Principles and practice in welded joint design. G. D. Fish *773

K

Knowles, Morris—dies n575

L

LABOR

Baltimore officials consider 30-hour week n267
Construction compensation rates increased in Ohio n90
Construction dollar—every cent for labor e21
Five-day week in Labor Dept. being considered n24
Hand labor raises pavement cost in Montreal n266
Minimum wage rates e630
San Francisco building trades to get wage cut n636
Shorter working time to assure full employment. D. C. Henny 249
Strike on Pittsburgh Post Office settled n393
Thirty-hour week for Wisconsin public works n179
Wage cuts advocated by Washington builders n179
Wage decision in Texas e20
Wage increase in Indianapolis building trades n58
Wage rates for relief work set n301
Wage rates set for highway work under relief act n238
Wage scale on relief work set by state highway departments n634
Wages — Bacon-Davis law amendment tabled n58
Wages determined for Twin Cities n22
Wages for Colorado River aqueduct work n483
Wages in highway bids e86
Wages set for highway work under relief act n208
Wanderer's plight e658

LAND RECLAMATION

Bureau of Reclamation's plans n25
Reclamation of the Zuiderzee. A. L. Shaw *639
Yokohama reclaims sea bottom 130

Landing, floating, steamship 106

Law:

Decisions in engineering law. Herbert Braasch 138

LEVEES

Lake Okeechobee channel and levee 242
Levees alone again fail e141
Mississippi levee building 469
Wagon haulage equipment for levee building. J. C. French *215
Yangtse River flood. Ludwig Brandt *133

Lighting:

Mount Vernon highway lighting *123

Locomotives:

Gasoline locomotive *212

Los Angeles:

Engineering bureau reorganized n116

Lubrication:

Oiling devices and lubricants for air tools. J. D. Clower *432

M

Maps and mapping:

Farm land areas determined by weighing cut-out prints. J. J. Bernstein 382
Relief map for traffic survey. R. C. Chaney *306

Marine structures:

British report on deterioration of marine structures 19
Sea water's effect on lumber, concrete and metal 19

Markets

New Orleans to have public market n300

MISSISSIPPI RIVER

Dredging of cut-off begun n451
Ferguson head of commission n26
Food control unit n514
Labor abuse charged n301
Levee building 469
Water line of 60-in. steel pipe pulled across river. C. C. Wilbur *99

MODELS

Better than calculations e296
Madden Dam spillway design tested by model *42
Retaining-wall models. W. K. Hatt ..... l 786
Siphon-spillway models tested against protypes. H. H. Wheaton *187
Soil action shown by model. W. S. Housel ..... l 626
Study of an arch bridge for stresses. F. L. Plummer *282
Tests of pier action. F. R. Harris l*627
Tests of soil action under footings. Pokrowski & Laletin *309
Timely warning on model tests. J. C. Stevens ..... l 506

Mooring mast for dirigibles *465

MOTOR VEHICLES

Limitations by state highway departments approved by automobile organization n761
Regulations recommended by highway officials n660

Trucks:

Hot oil truck for road patching. W. W. Shelby *369
Truck-trailer *699

Motors:

Splash-proof electric motor *796

MUNICIPAL GOVERNMENT

Costs for 1930 ..... n88
Efficiency in city administration e21
Is municipal credit sound? C. H. Chatters 738
Municipal finances e759
Organic improvements in government e57
Reducing municipal costs. C. E. Ridley, pt. 1 13, pt. 2 46
Year of municipal deflation e789

Municipal ownership:

Dixon, Ill., buys private water company n634
Florida municipal light plants subject to tax n634

Myers, John B.—E. E. Wall ..... l 173

*Illustrated; a, abstracts; e, editorials; l, letter; n, news

N

Nails, etching of, increases their holding power 530
National Assn. of Railroad & Utilities Comm.:
Truck regulation recommended n632
National Conference on City planning...n632
National Reclamation Assn. e788
Formed n734
New England Water Works Assn.:
Regional water problems at meeting.... 412
New York Architectural League e758
New York City:
8th Ave. subway in operation.....n330
Rockefeller Center plan *579
Newell, F. H., dies n61
North Carolina Sewage Works Assn. and American Water Works Assn.—meeting.n576
Nut, self-locking *486

P

Parks:
National:
Civil engineers discuss parks and streamflow 50

PAVEMENTS

Cast-iron-grid road surface *383
Cast-iron paving blocks *211
Cores reveal effectiveness of paving dummy joints. H. F. Faulkner.....*232
Hand labor raises pavement cost in Montreal n265
Rubber paving blocks in England 250
Silver Springs, N. Y., 100 per cent paved 278
Penstocks:
Hoover Dam penstocks installed *79

PILES AND PILING

Boring machine digs wells for concrete piers. H. A. Christie *105
Compressibility of clay increased by remolding. Arthur Casagrande *159
Concrete piles tested for uplift and bearing *104
Concrete superstructure built on old timber piling. T. D. Hunt *195
Court decides suit over piles in favor of dock board n209, appealed.....n419
Cylinder piles driven 140 ft. to rock for Starrett Lehigh factory. W. T. McIntosh *5
Five-mile seawall built on precast piles. H. A. Christie *33
New pile-bearing formula. R. M. Harris.l 787
New pile-bearing formula from model-pile tests. L. C. Wilcoxen *524
Pile-casting yard for highway bridges..*743
Rotary drilling equipment for piles to support auditorium at Long Beach, Calif. A. J. Smith *129
Steel piles for highway bridges in Nebraska discussed by engineers..... 51
Strength of clay. D. P. Krynine.....l*729

PIPES AND PIPE LINES

Clay liner plates embedded in sewer pipe to resist septic action *259
Effect of lead joint heat on bituminous pipe lining. E. T. Killam 199
Replacing old service pipes 376
Sewer pipe failures. A. M. Rawn.....l 261
Water line of 60-in. steel pipe pulled across Mississippi River. C. C. Wilbur *99
Water pipe laid across Panama Canal by use of cable support. A. L. Hertz....*562
Portland Cement Assn.—meeting n662
Thirty years e631

PORTS AND HARBORS

Boston harbor work n637
Federal contracts for river and harbor work approved n604
Harbor construction for 1934 .....n794
New ocean port for China proposed.... 401
Survey of tides and currents made at New York n238
War Department allotments for river and harbor n90
Work funds allotted n361
Power and power plants:
Power act is upheld e141
St. Louis applies for power dam on Mississippi n118
Power. See also Federal Power Commission, Hydro-electric power plants.

PUBLIC UTILITIES

Englewood, Colo., to have municipal power and water plant n118
St. Paul utilities revalued n636
Turning the tables e658

PUBLIC WORKS

American Engineering Council and public construction. Lee & Wallace l 689, editor's note 690
As to credit where due e692
Cities and states apply promptly for relief bill aid n117
Civil engineers' meeting discuss 443
Construction and the relief act. Malcolm Pirnie 534
Cost of federal public works (table), 1920-1931 93
Credit where due e630
Entitled to support e414
Federal building of new factory towns. W. S. Moody ..... l 83
Federal relief bill passed and vetoed.. n58
Federal reorganization approved and army work condemned n792
Funds cut by economy act n206
Helpful work postponed e692
List of works held up for lack of funds.n145
Long time planning progress e115
Louisiana governor vetoes bills for public works n144
Morocco program 254
National public-works policy. A. M. Lohman ..... l 657
New York housing development financed by R.F.C. loan n*573
R.F.C.:
Advisory board—Lamphere appointed.n266
Allotment for rivers made n664
Approves loans of over ten million..n538
Approves two applications n512
Board makes first report n236
Continued delays e297
Engineering board named by R.F.C. takes up work n208
Engineering board to pass on loans by R.F.C. n176
Engineers named to aid n482
Engineers to act on local boards for R.F.C. loans n358
Gains momentum e478
Getting work started through the R.F.C. Paul Wooton 348
Great responsibility e204
Loan for water works n480
Interest rates to be reduced.....n790
Late and strange e659
Loans.....n572, n660, n732, n760
Loan applications increase.....n236, n266
Loan board hampered e235
Loans desired for many public works projects n206
Loans expedited n661
Loan goes to Los Angeles n328
Loans move toward action by R.F.C. officials n360
Loan policy will be to ask high rate of interest n416
Loans to be supervised by control board n116
Lower interest rates e788
New Orleans bridge gets second loan granted by R.F.C. n388
New Orleans bridge may get first loan.n298
New Orleans bridge—special case e414
New York City's first relief bill project n142
Position e357
Public agencies prepare applications for federal funds n142
Receives applications for self-liquidating project loans n176
Revising the Relief Act e693
Sets rigid rule for loans n264
Three months' work e448
San Francisco bridge gets loan n450
Self-liquidating construction e114
Self-liquidating public works.....e175
Relief bill e87, n88
Relief to the fore e414
Reorganization of federal departments affects construction n734
Saving cost in government by private design. W. H. Wheeler ..... l 173
Word about cooperation e.326
Work for the fall e262
Your home town e509

PUMPS AND PUMPING

Automatic primer for centrifugal pumps.*699
New Castle waterworks uses vacuum tank to remove excess air. E. I. McCaffery *38
RCA building—skyscraper plumbing. C. M. Wilson *593
Self priming centrifugal pump *212

R

Railway consolidation:
Four system consolidation plan.....e387
Four system plan n388

RAILWAY CONSTRUCTION

Dotsero cutoff e387
Dotsero cutoff—company formed to build n482
Dotsero cutoff—Denver urges start.....n207
Dotsero cut-off loan passed n328
Dotsero cut-off—loan requested to build n143
Easton-Pittsburgh line not to be constructed n514
Fort Worth and Denver Northern Railway *609
Grade separation work stopped by lack of funds n634
Grand Trunk relocation on Detroit Pontiac line *501
New Orleans belt railroad contract not signed n24
Texas railway opposed by examiner... n91
Railway economics:
Loan sought for railroad from St. Louis to Kansas City n575
St. Louis & O'Fallon R.R.—values recommended n144
Railway electrification:
Main-line electrification on Southern Railway, England 46
Railway equipment:
Car-mounted compressor .....*
Welder can be removed from track quickly *513

RAILWAY TERMINALS

Car ferry and landing for Yangtse-Kiang, China .....
Factory of 19 stories built over railroad yard .....*
Freight terminal e636
Houston terminal may be postponed ..n
Los Angeles terminal delayed .....n
Los Angeles union terminal ordered.....n
New York freight terminal opens .....n*
New York's off-rail union terminal .....*
Rail-barge terminal on Ohio River ....n*
Two railroads combine to build Atlantic City terminal .....n

RAILWAY TRACK AND TRACKWORK

Crossings:
Girderless concrete slabs in Elmira grade crossing. M. Hirschthal.....*
Rails:
One piece rail lock for bascule bridge, Wabash Railway. S. M. Smith ....*
Tensile properties of rail steels at elevated temperatures .....
Railway Valuation:
I.C.C. valuation base to be considered by Supreme Court .....n

RAILWAYS:

Dotsero cutoff. C. M. Lightburn.....l
Grade crossing elimination de luxe.....e
New line under Vancouver, B. C. .....n*
New Zealand railway opening .....
Old underground railway remains .....n*
Singapore's new system .....
Suspended railway for World's Fair. W. G. Grove .....*

RAINFALL AND RUNOFF

Australia to make snow surveys..... 162
Effect of forests on streamflow discussed by civil engineers 50
Floods of two types in middle Rio Grande valley. R. G. Hosea *100
Forecasting snow runoff of Humboldt River, Nevada 135
Forests and streamflow e56
Revised method of averaging Oregon precipitation figures. L. L. Harrold 643
Unit-graph method of estimating runoff. Barrows, Pierce, Jarvis, Grunsky, Horton, Boling, Clude 223
Unit-graph method of estimating runoff. Horner, Gay, Sayville, Sherman.... 255
Water levels in wells in northern Virginia 464
Rapid transit:
New transit plan for Buffalo n267
Rapid transit. See also Subways

RECONSTRUCTION FINANCE CORP.

Activities:
Approves loans for water projects...n602
Approves loans of over ten million...n538
Approves two applications.....n512
Board makes first report.....n236
Continued delays e297
Engineering board to pass on loans by R.F.C. n176
Engineers to act on local boards for R.F.C. Loans n358
Gains momentum e478
Interest rates to be reduced on loans e788; n790
Loan applications n265
Loan applications increase n236
Loan board hampered e235
Loan for water works n480
Loan goes to Los Angeles n328
Loan policy will be to ask high rate of interest n416
Loans desired for many public works projects n206
Loans for construction e114
Loans not to be given to special assessment work n603
Loans to be supervised by control board n116
New Orleans bridge:
Gets second loan granted by R.F.C..n388
May get first loan n298
Special case e414
Position e357
Receives applications for self-liquidating project loans n176
Relief act and construction. Malcolm Pirnie 534
Relief bill e87; n88
San Francisco bridge gets loan n450
Self-liquidating construction e114
Sets rigid rules for loans n264
Three months work e448
Reconstruction Finance Corporation. See also Public Works
Regional planning:
Considering regional engineering e448
Philadelphia Tri-State District planning discussed at meeting 443

RESEARCH

Hoover Dam research e730
Improving research facilities e414
Iowa Institute of Hydraulics Research constructs addition *411

Laboratory research on Hoover Dam. Elwood Mead ....•724
Research, not routine e296
University of California's new materials laboratory ....•284

RESERVOIRS
Clay grouting at Madden reservoir. F. H. Kellog ....•395
Equalizing and storage reservoir for Provo, Utah. C. J. Ullrich .... •63
Pasadena to force decision on use of Pine Canyon reservoir n390
Retaining walls:
Record earth pressure testing machine. Karl Terzaghi ....•365
Ridgway, Robert e508
Retires ....n•512
Riprap placed by machine at Beauharnois. J. A. Knight ....•275
River improvements:
Connecting Stockton, Cal. with the sea W. A. Wood, Jr. ....•183

RIVERS
Columbia River development discussed by engineers 52
Construction for 1934 ....n794
Control work not affected by cost cut....n264
Federal contracts for river and harbor work approved n604
Floods of two types in middle Rio Grande valley. R. G. Hosea .... •100
Niagara River to be deepened n540
Niagara Falls promises to build docks if channel is deepened n207
War Department allotments for river and harbor n90; 361; n540
Water power resources on Snake River
Youngstown protests adverse report on river work n761
Rivers. See also Mississippi River, St. Lawrence River

ROOFS AND ROOFING
Dome of temple in Wilmette—casting and fitting panels for....•430
Erecting roof trusses in Rockefeller Center ....•614
Heavy snow load sustained by timber roof trusses. T. F. Chace ....•189
Hexagonal dome for Hebrew University. Julius Lasker ....•375

S

St. Lawrence Power Development:
Devleopment and provisions of treaty... 81
Early days on the St. Lawrence. C. D. Purdon l295
Waterway treaty e115
Sanitation:
Municipal officers discuss problems n452
Seawalls:
Five mile seawall built on precast piles. H. A. Christie .... •33
Sewage farming:
Dayton, Ohio, removes sand bed sludge and sells for fertilizer 41

SEWAGE WORKS
Activated sludge:
Sparta, Ill. plant rebuilt to treat rayon wastes. U. F. Turpin ....•780
Bar screen and grit chamber ....•269
Chicago District s report to Supreme Court n58
Chicago Sanitary District blames delay on tax tangle n602
Chicago water diversion to be reported to.n762
Civil engineer's meeting discuss 443
Columbus moves for construction of sewage plant n60
Dayton, Ohio, removes sand bed sludge and sells for fertilizer 41
Dewatering and incineration of sludge under test in Chicago 77
Distributor, rotating, for sewage filters. •638
Eight years' operation of Passaic Valley system. J. R. Van Duyne ....•440
English expert gives his impressions of American plants 54
Floating sludge reduces digestion tank gas yield. H. W. Taylor 372
Illinois bill for system n483
Imhoff-tank effluent aerated to reduce load on filters. W. R. Drury 752
Japanese sewage-treatment plant follows American practice. J. D. Hitch.... 469
Mechanical mixing device ....•363
Ohio Board's right to order sewerage work questioned n603
Operating Dunbar sewage filters. H. L. Thackwell ....•676
Ottawa, Kan. disposal plant. F. M. Veatch 200
Refuse dumps as sewage filters 355
Sedimentation tanks ....•608
Sludge collector and skimmer ....•241
Test on sludge beds show best drying depth. M. M. Cohn ....•315
Urbana and Champaign, Ill. gives satisfactory service 504
Wards Island—making a low bid pay ...e536
Wards Island sewage plant ....•517

SEWERS
Bill authorizing sewer rentals proposed in state of Washington n698
Clay liner plates embedded in sewer pipe to resist septic action ....•259
Dearborn sewer system has reinforced brick masonry. C. H. Fork ....•749
Extensive sewer work planned for Dallas, Tex. n388
Gas explosion in Montreal n695
Leaky sewer not fault of contractor ... n91
New York proposes sewer service charges n142
Pipe sewer failures in the Chicago region. P. E. Green 18
RCA building—sewer system. C. M. Wilson ....•596
Retaining basins in sewer systems in Germany 294
Sewer pipe failures. A. M. Rawn l261
Wide range in bids at Louisville n359
Ships and shipping:
Seatrain carries freight cars ....n•574
Signs:
Against flying signs e536
Outdoor-sign design. F. D. Hartford...•522
Siphons:
Siphon spillway models tested against protypes. H. H. Wheaton ....•187
Skinner, Frank W. dies....n793
Slattery, John R. e386; dies n391

SNOW
Australia to make snow surveys 162
Heavy snow load sustained by timber roof trusses. T. F. Chace ....•189
Hydraulic snow plow ....•796
Forecasting snow runoff of Humbolt River, Nevada 135

SOIL MECHANICS
Beach drainage safeguards Alexander Dam. J. B. Cox ....•466
Compressibility of clay increased by remodeling. Arthur Casagrande ....•159
A correction. Alfred Brahdy l507
Experience with Goldbeck cells. A. T. Goldbeck l535
Foundation soil overloading shown by penetration test. Stephenson & Feingold ....•161
Model tests of pier action. F. R. Harris.l•627
Model tests of soil action under footings. Pokrowski & Laletin ....•309
New pile-bearing formula from model-pile tests. L. C. Wilcoxen ....•524
Pressure distribution in soil. C. C. Williams l295
Record earth pressure testing machine. Karl Terzaghi ....•365
Soil action shown by model. W. S. Housel l626
Soil action under load shown by test. D. P. Krynine ....•782
Soil loading test practice in Europe. Karl Terzaghi 158
Soil research pays its way e205
Strength of clay. D. P. Krynine ....l•729

SPILLWAYS
Automatic sector gates for Coolidge Dam spillway. Paul Baumann ....•163
Hoover Dam spillways ....•720
Madden Dam spillway design tested by model .... •42
Siphon spillway models tested against protypes. H. H. Wheaton ....•187
Standardization:
American standard forms for concrete construction floors 645

STEEL AND STEELWORK
Boston Elevated adds new station. L. E. Moore ....•527
Erecting roof trusses in Rockefeller Center ....•614
Erection of Pittsburgh post office.... n59
Fabricators meet to consider depression cures n510
Hexagonal dome of steel for Hebrew University. Julius Lasker ....•375
Manufacturers ask exclusion of all foreign steel n60
Open-mesh steel deck for Seattle bascule •624
Outdoor-sign design. F. D. Hartford....•522
Philadelphia Savings Fund Building is unique in design ....•549
Plan of steel erection for channel spans of Little Belt bridge in Denmark....•428
Rockefeller Center steel erection 599
Skyscraper steel erection in RCA building ....•618
Tensile properties of rail steels at elevated temperatures 99
Three stories of structures steel for factory over railroad yard .... •1
Understressing and notch sensitiveness in fatigue. J. B. Kommers 353
Storage bins:
Circular concrete bins for grain storage. H. H. Frenzel ....•291
Further study of bin design needed. Byron Curry l626
Streamflow. See Rainfall and runoff
Street cars. See Electric railways

STREET TRAFFIC
Chicago traffic studies ....•612
Cleveland's traffic—survey plan. R. C. Chaney ....•305
Logic planning e326
No parking re-indorsed e140
Overpass aids traffic in Washington, D. C. park. D. H. Gillette ....•380
Result of working together e262
San Francisco's drastic remedy e57

STREETS
Elmira grade crossing. M Hirschthal .. •678
Falling marquee kills two on New Orleans sidewalk n207
Highway policies define l for metropolitan Chicago 186
Los Angeles abandons street widening n637; n695
Municipal officers discuss sanitary problems n452
New Orleans street drainage to be improved n575
Newark builds boulevard over subway. D. J. Heuer ....•243
Pedestrian tunnels in San Diego. T. E. Kenny ....•490
Unsymmetrical street crowns. M. W. Furr l295
Widening Detroit streets n540
Widening of streets in Akron. E. A. Kemmler .... •69

STRESSES
Heavy snow load sustained by timber roof trusses. T. F. Chace .... •189
Model study of arch bridge for stresses. F. L. Plummer ....•282
Understressing and notch sensitiveness in fatigue. J. B. Kommers 353

SUBWAYS
Boston subway extension opposed n695
New York City—auspicious beginning..e326
8th Ave. subway starts n330
Jack frame underpinning J. L. Washbourne ....•280
Subways e758
Work continued allotment of funds...n761
Newark builds subway on bed of Morris Canal. D. J. Heuer ....•243

SURVEYS AND SURVEYING
Azimuth in low latitudes. C. C. Wylie.l295
Azimuth mark set for use in local land surveys 490
Parabolic vertical curves. A. D. Millard.l753
Parabolic vertical curves for highway grades. M. W. Furr ....•496
Property and street map surveys give engineers employment. L. G. Merrill 168
Tides and currents surveyed at New York Harbor n238

T

TANKS AND STANDPIPES
Buoyancy tanks for car-ferry landing bridges .... •66
Chinese water tank. M. R. Arick l83
Chinese water tank. K. S. Lee l201
Construction of gasholder on bed of muck ....•746
Foundation design for an elevated tank. M. B. Meyer ....•644

TAXATION
Chicago tax muddle clearing e601
Indiana considers bills for local tax relief n89
Los Angeles water district plans for aqueduct construction n299
Municipal light plants in Florida subject to tax n634
Proposed reductions in Illinois n733
Telephone:
Ditching and laying plant for underground cable .... •74

TIMBER
Old timber bridge. C. K. Allen .....l•753
Oregon timber bridges. C. B. McCullough ....•213
Timber beams, checking the design of rectangular. C. K. Clausen.... •471
Timber traveler erects airship docks... •487
Timber and lumber progress reviewed at A.S.T.M. meeting n633
Timber. See also Wood, Marine Structures.
Towers:
Four sided frame bents carry 19 story tower in Dayton. N. J. Bell .....•248
Tractors:
Heavy-duty tractor ....•543
Wagon haulage equipment for levee building. J. C. French ....•215
Trailers:
Cable laying train ....•74
Heavy duty trailer ....•147

TRANSPORTATION
Combine transportation facilities between Fond du Lac and Sheboygan e758
Competition in transportation to be studied n540
Sublimating team haulage e234
Truck regulation recommended to utility commissioners n632
Wagon-haulage equipment for levee building. J. C. French ....•215
Tratman, E. E. R. retires from Engineering News-Record n23
Travelers:
Machine places riprap at Beauharnois. J. A. Knight ....•275
Tremie tube manually operated. J. C. Brownell ....•260

Trestles:
Concrete superstructure built on old timber piling. T. D. Hunt .....•195

TRUSSES
Erecting roof trusses in Rockefeller Center .....•614
Heavy snow load sustained by timber roof trusses. T. F. Chace .....•189
New welded truss design uses continuous tension members .....•136
Outdoor-sign design. F. D. Hartford...•522
Radio City's three theaters .....•583

TUNNELS
Bids on San Jacinto tunnel, Colorado River n696
Boston tunnel has steel lining e21
Boston water supply tunnel uses twin drill carriages and power shovel....•107
Diversion tunnel lining for Hoover Dam.•715
Driving Bridge River tunnel, British Columbia. C. E. Blee .....•169
Hetch Hetchy water tunnel 182
Holland tunnel—reduced cross-river traffic e658
Holland tunnel traffic declines n605
Mersey Tunnel at Liverpool.....n790
Moffat pioneer tunnel to be used as aqueduct n791
Moffat tunnel—company formed to build connection n482
Overbreak in tunnel excavation. A. A. Eremin 1 755
Owyhee irrigation project tunnel holed through n575
Pedestrian tunnels provide jobs for San Diego unemployed. T. E. Kenny ...•490
Railway line opened under Vancouver, B. C. .....n•265
Railway tunnel at Vancouver put in service n145
Railway tunnel at Whitehall, N. Y. demolished with trains running .....•620
Railway tunnel in Germany in difficulty with smoke 556
San Jacinto tunnel, Colorado River aqueduct .....•786
Vehicle tunnel under Boston harbor pt. 2 •39

U

Underpinning. See Foundations

UNEMPLOYMENT
Agency service in job-hunting 1 755
Boston Technical relief bureau seeks funds n419
Causes and remedies of the depression. J. V. Nimmo 1 233
Causes of depression. R. W. Powell ...1 385
Cities and states apply promptly for relief aid n117
Cleveland engineers open cooperative market n23
Cook County road funds diverted to unemployment relief n604
Engineers' relief work n760
Federal relief bill passed and vetoed... n58
Grand Rapids discontinues scrip n792
Highway work in Wayne County provides employment n91
Loans for construction e114
Los Angeles power bureau starts relief work n793
Make full use of work e508
Pedestrian tunnels provide jobs for San Diego unemployed. T. E. Kenny.....•490
Philadelphia survey shows many unemployed engineers n300
Professional tie e508
Progress still slow e414
Property and street map surveys give engineers employment. L. G. Merrill 168
Relief bill e86; e87; n88
Relief funds usefully employed. H. P. Eddy, Jr. 1 113
Revising the Relief Act e693
Road-work for unemployment relief in Michigan. C. M. Ziegler 561
San Francisco to vote on relief bonds.... n88
San Francisco votes relief bonds n301
Shorter working time to assure full employment. D. C. Henny 249
Spread work can bring relief. A. B. Staubach 1 113
Unemployed capital. J. R. Pranin 1 569
Unit prices.....33, 39, 62, 67, 195, 232, 291, 260, 399, 421, 498
U. S. Bureau of Standards:
Second leader e20
U. S. Federal Departments:
Cost of federal public works (tables) 1920-1930 93

V

VIADUCTS
Chicago completes diagonal thorofare..n•761
New Jersey viaduct. Fred Lavis.....1 753
New Jersey viaduct nears completion..n•511
Newark meadows viaduct opened to traffic .....n•661
Old timber viaducts on Great Western Railway, England .....•131
Reinforced concrete weir and viaduct. Unit prices .....•304
Vibration:
Instrument measures vibration .....•241
Studies of building sway e262

W

Walcott, Henry Pickering—dies n663
Walls:
Concrete partition walls in Chicago Post Office .....•283
New Orleans has seawall built on precast piles. H. A. Christie ..... •33
Water:
Sea water's effect on lumber, concrete and metal 19

WATER POLLUTION
Colon bacilli in water due to salamanders 373
Paratyphoid pollution in London's water supply 434
Pollution relieved in Passaic Valley by sewerage system. J. R. Van Duyne..•440
Safety and quality of water still need improvement. F. H. Waring .....•341
Upper Potomac River improved by cooperative effort 186

WATER RATES
Cleveland shows profit n117
Denver reduces n91
Indianapolis court upholds lowered rates n117
Relation between water rates and waterworks 750
Wholesale rate reduced in St. Louis suburb n300

WATER RIGHTS
Chicago diversion case revived n480
New York City not permitted to tap underground water n416
Regulation of boundary waters understudy by joint board n451
Wyoming and Colorado interstate suit..n764

WATER SUPPLY
Albany's new water supply in use n792
California special water session not to be called n177
Earth-boring machine for installing water pipes .....•608
Estimating groundwater yield similar to reservoir problem 125
Groundwater resources e448
Hetch Hetchy project has portable aggregate plant. H. V. Eastling .....•654
Hetch Hetchy project to be completed by city n142
Houston, Tex. to be supplied by Trinity River n482
Los Angeles aqueduct accepts bids for power n116
Los Angeles water district plans for aqueduct construction n299
Minnesota public waters to be controlled by law n792
Mono Basin project proposed n301
New York City not permitted to tap underground water n416
Regulation of boundary waters understudy by joint board n451
Safety and quality of water still need improvement. F. H. Waring .....•341
Sale of appropriated water by Wyoming cities prohibited n452
San Gabriel River flood waters may be conserved n24
Springfield, Mass. water suply problems discussed at meeting 412
Supply and distribution facilities are underdeveloped. G. G. Dixon .....•339
Washington to increase water storage..n209
Water commission advises against sprinkling ban in Minneapolis 222
Water line of 60-in. steel pipe pulled across Mississippi River. C. C. Wilbur •99
See also Aqueducts, Colorado River.
Water terminals:
Rail barge terminal on Ohio River.....n•299

WATER TREATMENT
Aerator and mixer, propeller type .....•394
Comparator for chlorination control.....•181
Discussion at convention at Springfield..
Filtration
Artificial light used for all residual chlorine tests .....
Concrete duplex filter bottom .....•
Filter bed hydraulics .....
Peru, Ind. plant to treat well or river water .....
Progress in filtering Chicago water supply .....
Rapid filter hydraulics (charts) .....
Mechanical mixing device .....
Missouri to investigate treatment in three towns .....
Purification plant for Toronto .....
Safety and quality of water still need improvement. F. H. Waring .....
Saginaw purification plant .....

WATER WORKS
Aerator-mixer .....
Anderson water department to be investigated .....
Changes in financing to follow relief act. E. B. Black .....
Changing trends in water works policy..
Dallas to improve system .....
Investor's view of waterworks bonds... 347
Most waterworks claimed to be self supporting. L. E. Ayres, Malcolm Pirnie 1 506
New Castle waterworks used vacuum tank to remove excess air. E. I. McCaffery •38
Not only waterworks men e356
Provo, Utah, equalizing and storage reservoir. C. J. Ullrich .....
Relation between water rates and waterworks .....
Relief act encourages revision in waterworks policy. M. E. Pirnie .....•336
Water needs of tomorrow e357
Water works are self-supporting. C. A. Haskins 1 656
Water works planning for new conditions. G. W. Fuller .....
Wilmette, Ill. lets contract n632
Wilmette, Ill. project held up by injunction petition n660
Wilmette, Ill. water works construction—long road e630

WATERWAYS
Connecting Stockton, Cal. with the sea. W. A. Wood Jr. .....•183
Illinois waterway will be ready for 1933.•402
Make waterways pay e801
Port Isabel, Texas, dredging of channel to Gulf of Mexico n540
Self-supporting waterways e630
Self-supporting waterways. W. M. Symon 1 755
Wedge for splitting timber .....•147

WELDING
Cutting assembly for torch .....•638
Foundation design for an elevated tank. M. B. Meyer .....•644
High-capacity welding machine .....•515
Metal structure and stress in welded joints discussed at meeting .....
New welded truss design .....•136
Patents argued in hearing n60
Principles and practice in welded joint design. G. D. Fish .....•773
Studies of continuity by welding .....
Tractor mounted welder .....•147
Welder driven by Ford engine .....•765
Welded joints for seismic stresses in tall building. H. H. Tracy .....•312
Wells:
Water levels in wells in northern Virginia 464
Western Society of Engineers:
Chicago highway policies defined 186
Wharves and docks:
Court decides suit over piles in favor of dock board n209; appealed n419
Creosoted timber pile wharf 242
Wind pressure:
Four sided frame bents carry 19 story tower in Dayton. N. J. Bell .....•248

WIND STORMS
High velocity recorded in Cuban hurricane n734
Lessons from hurricanes in Puerto Rico. Manuel Font .....•470
Storm violence appraised e478
Windows:
Sliding and swinging windows for commercial buildings .....•220
Wood preservation:
Treating timber after framing 383

Z

Zuiderzee work. See Land reclamation.

•Illustrated; a, abstracts; e, editorials; l, letter; n, news

AUTHOR INDEX

Ackerman, Adolph J.: Concreting plant for Madden Dam *671
Allen, Charles K.: Old timber bridges..... 1*753
Arick, M. R.: Chinese water tank 1 83
Ayres, Lewis E.: Most waterworks claimed to be self supporting 1 506
Ayres, Louis E.: Why use corewalls?..... 1 786

Baker, M. N.: Steel faced and all steel dams 1*505
Ballard, J. I.: Current dam construction in Southern California *564
Barney, William Joshua: Fast-truck concrete haul cuts building cost *778
Barrows, H. K., New flood formulas based on same principle as unit graph 223
Baumann, Paul: Automatic sector gates for Coolidge Dam spillway *163
Bell, Nelson J.: Four sided frame bents carry 19 story tower *248
Bernstein, Joseph J.: Farm land areas determined by weighing cut out prints... 382
Bittman, Henry Adding stories to old concrete buildings *472
Black, E. B. Changes in financing to follow relief act *346
Blee, C. E.: Driving Bridge River tunnel, British Columbia *169
Boling, Cecil: Method is check by New England streams 226
Braasch, Herbert: Decisions in engineering law 138
Brahdy, Alfred: Soil mechanics—a correction 1 507
Brandt, Ludwig: Great flood of the Yangtse River *133
Brownell, C. J.: Novel telescoping tremie tube is manually operated *260
Buff, L. F.: Governmental economy..... 1 113
Burton, Frank: Fire test of steel-joist floors 1 656

Carlson, R. W.: Development of low heat cement for mass concrete 461
Casagrande, Arthur: Compressibility of clay increased by remolding *159
Cavanagh, J. T.: Cement-penetration road practice in Australia *103
Chace, Thomas F.: Heavy snow load sustained by timber roof trusses *189
Chaney, R. C.: Materializing a traffic survey plan *305
Chatters, Carl H.: Is municipal credit sound? 738
Christie, H. A. Boring machine digs wells for concrete piers *105
Five mlie seawall built on precast piles *33
Clausen, C. K.: Checking the design of rectangular timber beams 471
Clower, James D.: Oiling devices and lubricants for air tools *432
Clyde, George D.: Variability of watersheds presents great weakness 226
Cohn, Morris M.: Test on sludge beds show best drying depth *315
Contron, T. L.: Floors of industrial buildings 1 233
Conzelman, John E.: Two-story houses, two rooms deep, for low-income group *8
Cox, Joel B.: Beach drainage safeguards Alexander Dam *466
Crandell, John S.: Building a low-cost base for a low-cost road *751
Crocker, Herbert S.: Trend of progress in engineering practice 78
Curry, Bron: Further study of bin design needed 1 626
Cutler, T. H. Slipping road fill held up by steel suspenders *684

Davis, Arnold: Cotton cloth used to waterproof road surface *194
Derleth, C. Jr.: Carquinez Bridge largest bridge west of Detroit 1 627
Dixon, G. Gale: Supply and distribution facilities are underdeveloped *339
Drury, W. R.: Imhoff tank effluent aerated to reduce load on filters 752

Eams, M. D. & W. S. Wolfe: Delay in planning buildings now means extra cost *374
Eastling, H. V.: Portable aggregate plant for Hetch Hetchy tunnel *654
Eaton, E. C.: Notes on abutment sluicing at St. Gabriel Dam No. 2 ..... *311
Eddy, Harrison P. Jr.: Relief funds usefully employed 1 113
Eremin, A. A.: Overbreak in tunnel excavation 1 755
Faulkner, H. F.: Cores reveal effectiveness of paving dummy joints *232
Feingold, E. B. & H. K. Stephenson: Foundation soil overloading shown by penetration test *161
Fish, Gilbert D.: Principles and practice in welded joint design *773
Fisher, H. D.: Floors of industrial buildings 1 233
Font, Manuel: Lessons from hurricanes in Puerto Rico *470
Fork, Charles H.: Reinforced brick masonry on Dearborn sewer system *749
French, J. C.: Wagon haulage equipment for levee building *215
Frenzel, H. H.: Design notes on circular Concrete bins for grain storage..... *291
Fuller, George W.: Waterworks planning for new conditions 343
Furr, M. W.: Parabolic vertical curves for highway grades *496
Unsymmetrical street crowns..... 1 295

Gay, Robert W.: St. Francis River tests made for new method 255
Germundsson, Thor: Concrete columns with large bars offer advantages *277
Gillette, D. H.: Overpass aids traffic in Washington, D. C. park *380
Girand, James B.: Steel faced and all steel dams 1 505
Goldbeck, A. T.: Experience with Goldbeck cells 1 535
Gould, Carl A.: Average bid advocated ... 1 754
Graf, Otto: New type of cement road in use in Europe *400
Graham, Mack.: Production and costs charts speed road grading *290
Green, Norman B.: Wood floor design for masonry wall buildings *491
Green, Paul E.: Pipe sewer failures in Chicago region 18
Groner, Chr. F.: Thin concrete diaphragm protects Ringedal Dam *498
Grove, William G.: Transporter suspension bridge to thrill World's Fair visitors.... *172
Grunsky, C. E.: For peak flows or total runoff, use usual methods *224

Hack, Albert & M. T. York: Truck-mounted plant for bituminous mix *531
Hanna, F. W.: Contraction joints of Pardee Dam grouted a second time *431
Harris, F. R.: Model tests of pier action..1*627
Harris, Roy M.: New pile-bearing formula 1 787
Harrold, L. L.: Revised method of averaging Oregon precipitation figures 643
Hartford, F. D.: Good practice in outdoor-sign design *522
Harza, L. F.: Bituminized-cement concrete. 1 754
Sound engineering principles violated in Oued Kebir Dam 1 786
Haskins, Charles A. Waterworks are self-supporting 1 656
Hatt, W. K.: Retaining-wall models 1 786
Hauer, Daniel J.: Newark solves complex transit problem *243
Heck, N. H.: Structural hazard of earthquakes measured by new instruments.. *288
Henny, D. C.: Dams on the San Andreas fault 1 385
Shorter working time to assure full employment 249
Hertz, A. L.: Pipe laid across Panama Canal by use of cable suport *562
Hilbourn, H. D.: Unusual girder contour marks new concrete bridge *36
Hinds, Julian: 200-year old masonry dams in use in Mexico *251
Hirschthal, M.: Girderless concrete slabs solve headroom problem *678
Hitch, Joseph Delano: Advanced American practice followed in Japanese sewage treatment plant 469
Horner, W. W.: Further discussion of unit graph method of estimating runoff 255
Horton, Robert E.: Studies show unit graph is fundamentally sound 225
Hosea, R. G.: Floods of two types in middle Rio Grande valley *100
Houk, Ivan E.: Uplift pressure measured at Gibson Dam *196
Housel, W. S.: Soil action shown by model 1*626
Hughes, F. D.: Spread work for engineers 1 626
Hunt, Thomas D.: Concrete superstructure built on old timber piling *195

Jacobs, Joseph: Unprecedented percolation record 1 729
Jarvis, C. S.: Divergent data need study to perfect the new method 224

Kaat-Jensen, Kai: Bold open caisson method in Denmark *427
Kellogg, F. H.: Clay grouting at Madden Reservoir *395
Kemmler, E. A.: Street-widening experience counsels against haste *69
Kenny, Theodore E.: Pedestrian tunnels provide jobs for San Diego unemployed. *490
Killam, Elson T.: Effect of lead joint heat on bituminous pipe lining 199
Knight, J. A.: Machine places riprap at Beauharnois *275
Kommers, J. B.: Understressing and notch sensitiveness in fatigue 353
Krautheim, E. H.: Straightening leaning building walls by jacking frames *382
Krynine, Dimitri P.: Soil action under load shown by test *782
Strength of clay 1*729
Kuroda, T.: Replacing plate girder bridges by inverting the spans *497

Laletin, N. W. & G. I. Polrowski: Model tests of soil action under footings *309
Lasker, Julius: Unique dome design fixed by need of light members *375
Lavis, Fred: Meadows viaduct 1 753
Lawson, L. M.: High September floods along the Rio Grande *557
Lee, K. S.: Chinese water tank 1 201
Lee, W. S. & L. W. Wallace: American Engineering Council and public construction 1 689
Lightburn, C. M.: Savings by the Dotsero cutoff 1 569
Lohman, Albert M.: National public-works policy 1 657
Luten, Daniel B.: Causes of depression.. 1 535
Lyse, Inge: Visualizing concrete economy in terms of strength 109

McCaffery, Edward I.: Additional vacuum tank solves difficult suction lift problem *38
McCullough, C. B.: Timber highway bridges in Oregon *213
McIntosh, W. T.: Extra long cylinder piles carry column loads to rock *5
MacMullan, Ralph A.: Bid peddling 1 754
Macwhorter, B. P.: Sealing cracked asphalt for resurfacing 613
Mansuy, W. G.: Technical services cooperate to cut building costs *650
Mead, Elwood: Laboratory research *724
Merrill, L. G.: Property and street map surveys give engineers employment 168
Meyer, M. B.: Foundation design for an elevated tank *644
Millard, A. D.: Parabolic vertical curves..1 753
Moody, Walter S.: Employment through federal building of new factory towns .. 1 83
Moore, Lewis E.: New station added to Boston Elevated *527

Nimmo, J. V.: Causes and remedies of the depression 1 233
Noetzli, F. A.: Corewall in rockfill dam tilts when reservoir fills *529

O'Brien, Morrough P.: Analyzing hydraulic models for effects of distortion 313
O'Shaughnessy, M. M.: Earth dams in Hawaii 1 787
Steel faced dams 1 113
Steel joints in rockfill dams..... 1 657

Parker, Joseph W.: Underpass carries parkway beneath car track street *322
Petty, Ben H.: Road administration revamped in Indiana 384
Pierce, Charles H.: Unit graph is not constant 223
Pirnie, Malcolm: Construction and the relief act 534
Most waterworks claimed to be self supporting 1 507
Relief act encourages revision in waterworks policy *336
Plummer, Fred L.: Model study of an arch bridge for statistically indeterminate stresses *282
Pokworski, G. I. & N. W. Laletin: Model tests of soil action under footings ... *309
Powell, Ralph W. Causes of depression ..1 385
Depression economics 1 729
Pranin, John R. Unemployed capital 1 569
Purdon, C. D. Early days on the St. Lawrence 1 295

Rawn, A. M. Sewer-pipe failures 1 261
Ridley, Clarence E. Reducing municipal costs pt 1 13; pt. 2 46
Robbin, Morris A.: Machine constructs cable line from trench to backfill *76
Rosov, L.: Cement water ration 1 201
Rost, O. Fred: Supply dealer's changing place in materials distribution 493

Savage, John L.: Hoover Dam cement specifications tentatively formulated.... *558
Saville, Thorndike: Applied to southern streams, results in inaccuracies..... 257
Scott, Carl F.: Elevator problem of the town building *317
Modern solutions of the high rise elevator problem *350
Shaw, Arthur L.: Reclamation of the Zuiderzee *639
Shelby, W. W.: Cost of road patching cut by oil truck *369
Sherman, L. K.: Author replies 258
Smith, Aaron J.: Rotary drill bores holes for timber piles in clay..... *129
Smith, S. M.: One piece rail lock for bascule bridge, Wabash Railway..... *294
Spargo, William: New Morris County road. *438
Spurling, O. C.: Experience with floorings in industrial buildings *191
Stanley, C. Maxwell: Why not steel dams?. *652
Starke, Howard R., Hubert Woods & H. H. Steinour: Effect of cement composition on mortar strength *435
Heat evolved by cement during hardening. 404
Staubach, Arnold B.: Spread work can bring relief 1 113
Steinour, Harold H., Hubert Woods & H. B. Starke: Effect of cement composition on mortar strength *435

*Illustrated; a, abstracts; e, editorials; l, letter; n, news